Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

IV SEMESTER B.TECH ENGINEERING

END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: AIR AND NISE POLLUTION [CIE-3284]

REVISED CREDIT SYSTEM

Time: 3 Hours **17-05-2016** MAX. MARKS: 50

Instructions to Candidates:

- *Answer ALL the questions.*
- *Missing data may be suitably assumed*
- Dispersion coefficient graph and chart is allowed

1A.	Comment on oxides of Nitrogen and Sulphur and their sources in environment	**4**
1B.	Explain the generation of Ozone in the atmosphere with chemical equations and the influence of CFC molecules on the same.	**4**
1C.	With a neat sketch show the difference between fanning and Fumigation.	**2**
2A.	Derive the expression for concentration of pollutant using Gaussian plume model at various heights of stack.	**5**
2B.	(i). Explain effective stack height. (ii). A foundry is emitting 500 Kg/ day of SO_2 from a stack of effective height 50m. The prevalent wind velocity in the horizontal direction is 4 m/s. Climate outside is a hot sunny day. Estimate the maximum concentration of the pollutant in the direction of wind at the ground level at a distance of 2000 m, y=0, z=0.	**5**
3A.	What are the objectives of implementation of Air quality index?	**4**
3B.	Explain the components of a high volume sampler with a neat sketch.	**4**
3C.	Explain the difference between Nephelometry and Chemiluminiscence method of Air Quality measurement.	**2**
4A.	Estimate the cut diameter and overall collection efficiency in a of a cyclone given the particle size distribution of dust from cement kiln. Particle size distribution and other data are given below. Density of gas is neglected. Calculate collection efficiency by forming a tabular column. Gas viscosity = 2.5x 10^{-5}Kg/ms; Specific Gravity of the particle = 2500 Kg/m3 ; Inlet gas velocity of cyclone = 12 m/sec; Effective number of turns within cyclone = 5 Cyclone diameter = 2 m Cyclone inlet width = 0.7	**4**

Avg Particle size, dp, µm	1	5	10	20	30	40	50	60	>60
Weight	03	20	15	20	16	10	06	03	07

Reg. No.										

प्रज्ञानं ब्रह्म

Manipal

INSPIRED BY LIFE

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

KNOWLEDGE IS POWER

MANIPAL INSTITUTE OF TECHNOLOGY

4B.	Explain SNCR process with necessary equations. List its advantages and disadvantages compared to SCR method.	**4**
4C.	Explain bioleaching and ash washing process of treatment of APC residue.	**2**
5A.	Explain any three principles of Noise measurement with necessary examples	**6**
5B.	Explain effects of Noise pollution on environment citing examples	**4**